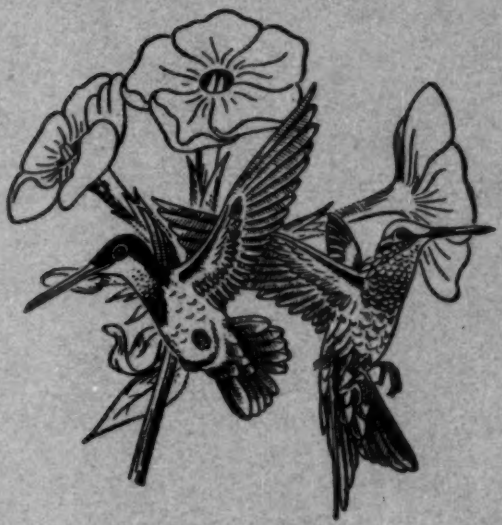
AVICULTURAL MAGAZINE



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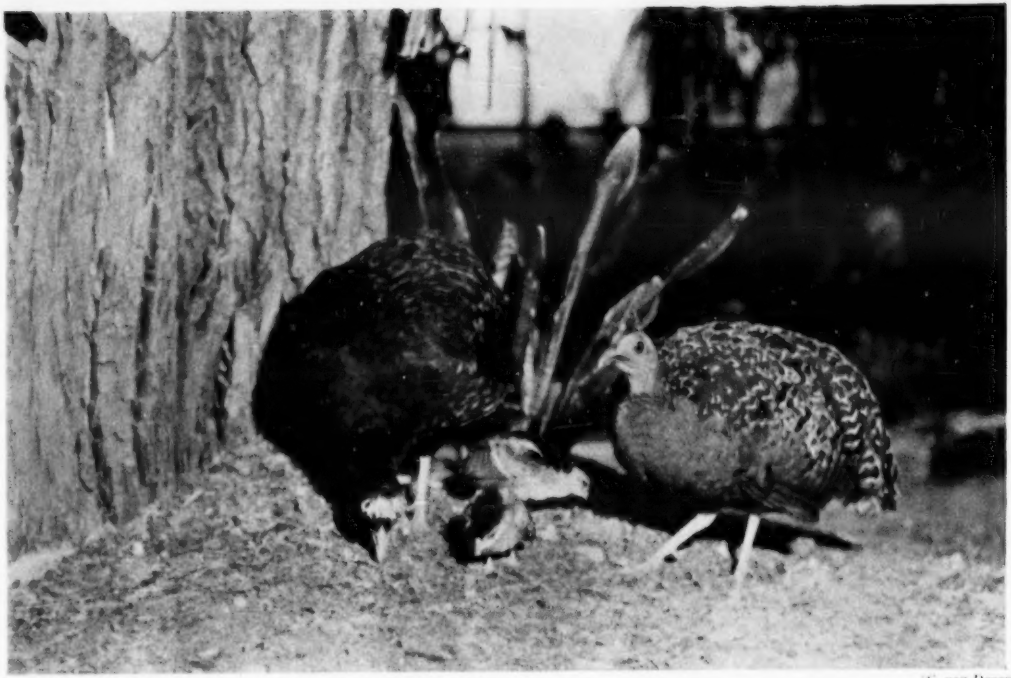

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CONGO PEACOCK, MALE AND FEMALE AND CHICKS TWO WEEKS OLD

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY

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THE CONGO PEACOCK

(*Afropavo congensis* (Chapin))

By F. J. APPELMAN (The Hague, Holland)

In 1959 the Antwerp Zoo acquired three pairs of the Congo Peacock from Mr. Cordier. The Director, Mr. Van den bergh, whose main object was to give the precious birds the best chance, spread the risk by giving one pair to Monsieur Delacour at Clères and one pair to the Rotterdam Zoo.

The Rotterdam Zoo, was of course, very much honoured and we felt the more happy when, on 24th August, 1960, we were able to announce to Mr. Van den bergh the hatching of two Afropavos.

When we received this precious pair at the end of 1959, we housed them in an aviary in the Victoria regia hothouse, where the temperature fluctuates from 22°–27° C. and where the humidity is always very high. We planted the aviary in such a way as to more or less resemble a tropical forest.

At first the birds were very shy and always hid among the bushes, but after some weeks they grew tamer, and after some months they became very quiet and even accepted mealworms from the hand.

In April, 1960, they became more active and started displaying, both birds spreading their tails in the same way as Peacock Pheasants. The birds preferred to perch on the small trees which we had planted in their house. On the 10th May we found a crushed egg under a tree, and next day a broken egg. Then it dawned on us, that the hen would only lay in a tree-nest and that the eggs had fallen on the ground as there was no room for a proper nest. We therefore put a basket in their willow-tree, and this immediately received the attention of the hen.

On 1st June, 1960, there was an egg in the basket and the next day a second. The hen started brooding, lying very flat on the eggs, and remaining so still and silent that we often wondered if she was still

alive. On 16th June to our great disappointment we found the clutch broken on the ground ; this clutch proved to consist of three eggs, all containing embryos. We never discovered the cause of this calamity.

Fortunately on 22nd July, 1960, the hen started laying again and after she had laid a second egg on the following day, she very seldom left the nest. Later on, we found that the clutch contained three eggs.

On 22nd August the hen became a bit restless and maybe one of the eggs had already hatched on that day, but we dared not disturb her. On the morning of 23rd August we saw two chicks on the edge of the nest, one of which let itself fall down, the other remaining with the mother. The cock at once ran to the chick that had come down, and behaved completely like a hen, warming the chick under his breast and wings and showing the little creature how to look for food.

The next day, 24th August, the hen came down with the second chick and from that moment both parents cared for their offspring. We got the impression that the chick that left the nest first, preferred to stay with the cock, but that is only an impression. The third egg contained a dead chick.

The Afropavos did not feed their young with the bill like Peacock Pheasants, but we observed the chicks took the food from the bills of their parents.

The eggs of the Afropavo are somewhat large in proportion to the size of the hen and the chicks are very vigorous and can fly in two or three days. They prefer to spend the night up in the trees, under the covering feathers of their parents. Unfortunately one of the chicks died of coccidiosis on 9th September, but the other one has grown up to a very fine young hen, which has already become very jealous of its mother.

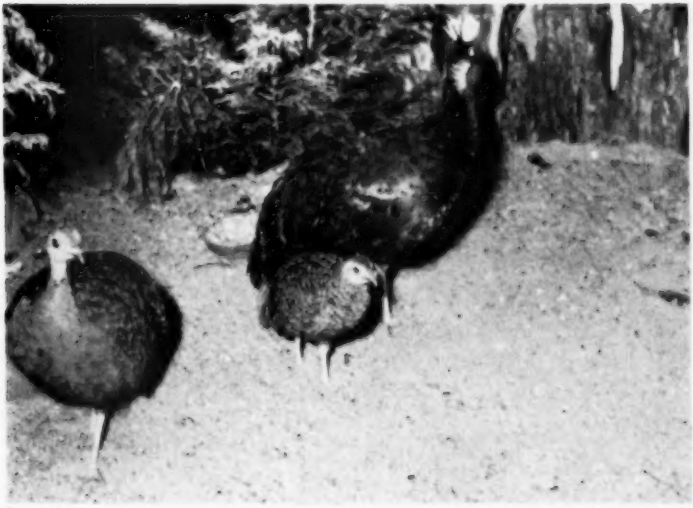
About 1940, Afropavo was bred in the Congo in the aviary of a private person. The result, however, was extremely poor, for the only chick which hatched died after a few days.

In June, 1960, the Antwerp Zoo again got some Afropavos from Mr. Cordier and the Zoo now possesses four pairs, two pairs are kept at Antwerp, and the other two pairs in the annex Plankendael at " Muizen ".

As, in our opinion, the breeding of Afropavo does not seem to be in any way more difficult than the breeding of many other gallinaceous birds, we hope that in the near future the species may be seen in many collections. In this event, the chances of preventing the extinction of these interesting birds will be increased.

* * *

Congo Peacock Female on Three Eggs



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Congo Peacock Male and Female and Chick Three Months Old

To face p. 42

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Congo Peacock Male and Female and Female Chick Five Months Old

To face p. 43

NESTING OF THE RED BIRD OF PARADISE
(*Uranornis ruber*)

By A. H. ISENBERG (Portola Valley, California, U.S.A.)

These birds come from the islands west of New Guinea. Six years ago I was fortunate in obtaining three of them. It seemed at the time that two were females, one being in first year plumage. The second year one of the " females " showed distinct horn growth, which only males have, and two years later produced his first-year plumes and the next year was fully plumed like the older male. This younger male was a most amusing bird, quite noisy and clownish, as he would dance by the hour, leaping back and forth on one branch and snapping at the branch's end until, after months of this behaviour, he had actually polished the last inch tip of the branch. Unfortunately this bird died of a head injury this spring (1960).

Up until last May neither male would tolerate the female so all three were in separate aviaries. The older male was without heated shelter and never the worse for weather all through winter with temperatures down to 28° F. several nights and heavy rains, etc.

In May I put the older male and female together in an aviary, approximately 40 feet by 20 feet and 10 feet high, planted with bamboo, fig, and two thick Japanese plum trees, and a good-sized lawn, plus the shelter (unheated) approximately 10 feet by 10 feet by 8 feet high.

The pair got along quite well here, and by 4th July the female had built a nest of dry leaves and twigs in one of the thick parts of a plum tree, about 8½ feet from the ground. The nest was boat-shaped rather than round and lined longitudinally with fine bamboo and grass stems. Two eggs were laid (beautiful eggs, pale fawn with, if anything, a pinkish wash and streaked with reddish brown). The eggs are much larger at one end. I managed to save one, the other disappeared.

The female alone sat steadily from 8th July to early August before I took the egg and found it infertile. John Griswold from the Philadelphia Zoo blew out the egg for me.

The male was already in moult when the female started laying, but the female only began moulting in September. The male now is, once again, in full feather and very beautiful. The male completely ignored the female and the nest.

A few days after I took the egg the nest was destroyed and the female carried a few sticks and leaves but then abandoned any further attempt. It is hoped that next year the nest will be built in May or June, while the male is still in full plumage.

I would appreciate any comments on the moulting and nesting of Paradise Birds. Dr. Sten Bergman had similar moulting-time sex differentials with his Kings.

My pair of Lesser Birds of Paradise are in the largest aviary, a veritable jungle of bamboo and other trees, but did nothing. This is their first season in this aviary. Perhaps next year? They, too, moulted like the Reds, the male first, by two months.

My little King Bird of Paradise completed his moult in August. Anyone knowing of a female King available, please do write me, as I have a perfect greenhouse breeding zone for them.

* * *

ON THE HARDINESS OF CAIQUES

By Claude M. Payne (Barford, Warwickshire, England)

For a full and authoritative description of the species I would refer readers to the paper by Arthur A. Prestwich in the July/August, 1955, number of the *Magazine* and content myself with a report on one pair of White-bellied Caiques (*Pionites leucogaster leucogaster*). I would stress that I am not unaware of the fact that often it is the exception which proves the rule. However, it will not be amiss, I think, if I remind readers that Caiques, as a group, inhabit the lower reaches of the Amazon where the atmosphere is extremely humid and the temperature high—a most unhealthy climate for humans by any standard.

This particular pair of Caiques came to me through the good offices of a fellow member some five years ago. The first year, as they were in juvenile plumage, was spent indoors in a roomy standard type parrot cage, where they had a fairly good moult. During the following summer they were put out into an aviary in the garden. By a series of unexplained delays on my part the birds were allowed to remain in quarters which one would have thought very inadequate. However, as the birds appeared to be enjoying the fresh air and exercise (in point of fact they took a bath even when the temperature was below freezing point) I felt disinclined to remove them to the birdroom where, in the usual way, they would have spent the winter in a temperature of 50° Fahrenheit.

The Caiques undoubtedly flourished with this spartan treatment and took on a new bloom which has never left them. They only used the shelter, to which they had access through a nine-inch aperture, for feeding purposes and even in the most bitter weather they were ever ready to receive a titbit in the form of a peanut, grape, or mealworm. Although Caiques are noted for their strident voices, at these times they only uttered the harsh growl of pleasure.

During this particular winter we experienced every kind of weather from frost and snow to winter sunshine, but at no time was there the slightest sign of depression or ill-health. The birds often perched with

their feathers away from their bodies, but this is the normal way birds have of insulating themselves from the cold air. They also appeared to shiver, but they do this when excited. Any member who has kept Caiques will agree they are not the sleekest of birds and they always remind me of a tousled-haired urchin.

I am not one who subjects his pets to extremes of temperature merely to prove a point. I am too fond of comfort myself for that, but I do really think that we have tended in the past to fuss a little too much. I appreciate of course that one Swallow does not make a summer any more than one hardy pair of Caiques makes the genus as a whole hardy, but my experience with this particular pair would tend to show that they are hardier than was hitherto thought.

Since the summer of 1957 the Caiques have occupied an outdoor aviary and have never been brought into winter quarters. Their condition speaks for itself for seldom have I seen Caiques in such robust condition, with powers of flight far and away superior to that of birds which are only allowed out during the summer months.

The Caiques sleep in a small parrakeet nest-box about eighteen inches, by nine inches, by nine inches in the open flight. One last thought : although the Asiatic parrakeets here often lose their toes from frostbite the Caiques have complete appendages.

Mr. Arthur A. Prestwich, in the excellent paper already referred to, says on p. 164 " They (writing of the genus) are credited as being very sensitive to cold, but once acclimatized they seem reasonably hardy. They should, however, always be shut in their shelter at night and in the winter artificial heat must be provided ".

Lady Poltimore, writing in the *Magazine*, November, 1936, about the successful breeding of a hybrid Black-headed Caique × White-breasted Caique says : " I put them in an aviary of which they were the only occupants. This aviary is heated by hot-water pipes, and has a garden flight which they use in warm weather, but they are always shut into the inside portion at night, and in the winter. I have found these birds very susceptible to cold, and during the time that they have been breeding this summer, we have often had to give them artificial heat."

Are my pair of Caiques an exception to the rule or is the species hardier than we have been led to believe ? That is the question which still needs a lot of inquiry.

I have one other Caique at the moment, a Pallid Caique (*Pionites melanocephala pallida*) the survivor of four bought on the continent a few years ago. As this bird is a family pet he has not been subjected to life in an outdoor aviary. I believe he would prove equally hardy, but it would be extremely cruel to deprive him of continuous human company—he is never so happy as when he can nestle under one's chin and be fondled.

INSECTS AND FOOD MIXTURES FOR INSECTIVOROUS BIRDS

By Robert W. Ficken and William C. Dilger
(Laboratory of Ornithology, Cornell University, Ithaca, New York)

Introduction

Aviculturists have repeatedly stressed the desirability of feeding large quantities of a variety of live insects to insectivorous birds. The frustrations which we encountered in attempting to raise and keep perfect specimens of American Wood Warblers (Parulidae) for ethological studies led us to explore various techniques of insect culturing and capturing in an attempt to reach the ideal of an almost pure diet of insects. The best of these techniques from almost all standpoints is raising bee larvae (see Gary, Ficken, and Stein 1961). However, other methods are also valuable. The purpose of this paper is to discuss some of the methods currently used by entomologists in culturing and capturing insects and, where possible, to tell of our experiences in using these to feed insectivorous birds. There is also a short discussion of some important facts concerning avian nutrition including comments on food mixtures for insectivorous species.

Insect Culture Techniques

Cultures can only be maintained if an adequate supply of adults is available. This may be easily accomplished by merely continually allowing a calculated number of the insects to reach maturity.

The following factors should be taken into consideration when choosing an insect species to culture for birds: (1) potential productivity and size of each species; (2) ease of culture manipulation and harvesting; (3) controllability of production; (4) danger of disease in the culture; (5) danger of the insects escaping into the home or laboratory; (6) cost of setting up the cultures and maintaining them; (7) efficacy of simply purchasing the insects from a commercial establishment rather than raising them; (8) danger of overfeeding any one species to the birds; and (9) palatability, digestibility, and nutritive value of the insects.

From all of the above standpoints House Crickets (*Acheta domestica*), Wax Moths (*Galleria mellonella*), House-flies (*Musca* spp.), Blow-flies (Calliphoridae), and Honey Bee larvae (*Apis mellifica*) seem most suitable and the culture methods of all except the latter are discussed in detail.

House Crickets (*Acheta domestica*) have been raised in large numbers by Dr. Robert L. Patton of the Department of Entomology, Cornell University, using a method modified slightly from the one used by

Dr. F. E. Whitehead (Univ. Arkansas). P. C. Stone (Peterson, 1953) claims that they provide good food for birds and other insectivorous animals.

A rearing container about 15 inches by 25 by 15 is a convenient size. A glass aquarium, a wood or metal box, or an enamelled cardboard box will serve the purpose. The bottom may be covered with dry sand, although this is not essential, but a finger bowl, cake pan, or similar container filled with wet sand should be provided as a repository for eggs. A single female may lay as many as 2,600 eggs and these should begin to hatch in thirty days at 80° F. or fifteen days at 85° F. The rearing and breeding cage should be kept in a warm room (80° F. to 85° F.) or provided with a heat source such as a bank of light bulbs. The large nymphs and adults are somewhat cannibalistic so hiding places should be provided for the small nymphs. Excelsior is the best material for this purpose. The young nymphs crawl into the material and the older ones use it as a resting place.

Open formula chick starter mash is the most economical food for crickets. This can be purchased from any poultry feed supply store. Avoid the formulations which contain antibiotics if possible. Water must be provided at all times. The easiest device for this consists of a half-pint jar or a six to eight ounce water tumbler filled with water, covered with a folded facial tissue, and finally covered with a round or square piece of heavy-duty aluminium foil. This should be crimped around the edges so that the tissue protrudes between the foil and the glass. This can be inverted in the cage and the crickets can get enough water to serve their needs by chewing the wet tissue. The tissue must be changed regularly since the crickets have a strong tendency to chew it off. Rearing can be done either in a series of separate containers for the nymphs or in a combined rearing-breeding chamber.

The easiest way to harvest the crickets is to use a scoop-shaped can made from a square gallon container. Cut one end at an angle to form a scoop and replace the other end with one-quarter inch hardware cloth. The crickets are gathered in the scoop and the individuals that are too small for feeding will fall or be shaken through the hardware cloth. The nymphs will reach the adult stage in from five to nine weeks depending upon the rearing temperature.

Black Field Crickets may be raised also using a method described by Swingle (1946) but these are much more chitinous than House Crickets.

Wax Moth larvae (*Galleria mellonella*) are an ideal species to culture for insectivorous birds. American Redstarts (*Setophaga ruticilla*) have been hand-raised and kept as adults using these insects almost exclusively (Dr. Millicent Ficken, pers. comm.).

Dr. David Pimentel (pers. comm.) has developed two excellent culture methods.

A medium is prepared as follows: Mix two pounds of "Pablum" mixed baby food, 600 cc. glycerol, 600 cc. honey, one quart non-fat milk, one quart brewer's yeast, and 1 per cent by weight of sodium or calcium proprionate to inhibit mold.

The moths may be easily sexed by the length of their snouts (palpi); the male has a blunt snout while the female has a long one.

The moths may be raised in half-pint jars as follows: (1) fill the jars one-third full with medium; (2) place two pairs of newly-hatched adult moths in each jar and cover the jar with a cardboard lid from an ice cream cup; (3) place the jars in a plastic refrigerator box and include one open jar half full of water. This may be removed after the larvae have reached the second instar. When the larvae begin to pupate each jar is emptied into the bottom of a plastic refrigerator box or other similar container where they may be picked from the medium and fed to the birds or frozen for later use.

The larvae may also be raised in much larger containers such as ten-gallon tins in the following manner: (1) place 3 inches of medium in the bottom; (2) add fifty pairs of adults and cover the container with a thin plastic sheet until the larvae reach the second instar; (3) place a 3 or 4 inch strip of corrugated cardboard around the inside top edge of the container; (4) when the larvae have begun to pupate by crawling into the corrugations of the cardboard, remove the strip and replace with a new one each day; (5) add fresh medium as needed; (6) harvest the larvae by merely peeling the outer coating off the cardboard. This technique should yield at least one hundred larvae per day during the emigration to pupate. The cycle may be continued indefinitely if the adult pairs are added each week.

Dr. Arthur A. Allen (pers. comm.) successfully raised Ruffed Grouse (*Bonasa umbellus*) on a diet that started with blow-fly larvae (Calliphoridae), using a method which he developed and which we have subsequently tried and found quite successful. A half of a beef lung is left outside until dozens of blow-flies have deposited their eggs. This lung is then placed in a shallow pan on a layer of charcoal to absorb moisture. After two of three days the larvae are shaken from the lung which is now dry and the lung is replaced by a slab of liver on which to fatten them. The pan itself is put in a larger milk pan containing a layer of bran so that the maggots, upon leaving the piece of liver, crawl out of the moist pan and drop into the dry one and cannot escape. After all the maggots have left the lung for at least twenty-four hours the bran is sifted through a strainer so that it falls through leaving the clean maggots and pupae. These are then ready for immediate use or they can be put into small plastic bags and frozen. The technique works well if several cautions are observed. The culture must be kept dry either by housing in an open shed or by building a shelter. The culture should be screened to keep out

predators such as dung beetles which feed upon the larvae. The amount of eggs laid should be carefully controlled so as to obtain the optimum number of larvae. When feeding the maggots to birds, care should be exercised. Some birds pass them whole through the digestive tract, for example, Eastern Bluebirds (*Sialia sialis*) (James Hartshorne, pers. comm.) and American Redstarts (*Setophaga ruticilla*). Uncleaned maggots, which have black undigested material in the gut, would obviously be dangerous to feed. Larger and tougher birds may do well on maggots. For example, a hybrid between an American Robin (*Turdus migratorius*) and a Blackbird (*Turdus merula*) was raised from the egg on a diet which consisted mainly of thawed blow-fly maggots and earthworms (Dilger, 1959).

Dr. David Pimentel (pers. comm.) has developed highly successful techniques for raising house-flies and blow-flies in quantity. Adult flies are kept in plastic refrigerator boxes (twelve inches by ten inches by four inches deep) which have been modified as follows: (1) a four inch by six inch hole is cut in the top and a one inch wide hole is cut along both of the 12 inch sides. These holes are covered with window screen; (2) a circular hole one inch in diameter is cut in the top and corked. In order to obtain eggs place several 50 cc. wide-mouth vials containing cheesecloth soaked in skim milk in with the adult flies. This may be easily done by grasping each vial with long forceps and lowering it through the one-inch hole. For blow-flies add a small piece of liver to each vial as well.

Prepare the medium for the larvae as follows: (1) heat 2·7 liters of water to boiling, then add 60 cc. agar powder and allow this to boil for 20 minutes; (2) in the meantime add 600 cc. dry skim milk and 600 cc. dry brewer's yeast powder to one liter of cold water. Mix this thoroughly with a beater; (3) add this mixture to the boiling agar solution after turning off the flame and stir until the mixture is uniform; (4) ladle this into 4-ounce ice cream cups or comparable containers until they are half full and store these in the refrigerator. One batch should yield 30 medium cups.

More of the same type of plastic refrigerator boxes are used for larval culture and are modified as follows: (1) a one inch layer of clean sand is placed on the bottom; (2) this in turn is covered by a platform made of hardware cloth which rests just above the sand; (3) a four inch by six inch hole is cut in the top and covered with window screen.

Place about 200 house-fly eggs in each medium cup and cover lightly or place about 100 to 150 blow-fly eggs in each medium cup and do not cover. Each culture box should hold about nine such medium cups.

When they are ready to pupate the fly larvae will crawl out of the medium cups and fall into the dry sand. The larvae or pupae (depending on how they are left) may be gathered daily by straining

the sand through a fine screen. Each plastic culture box should yield about fifteen grams during the emigration and pupation stage.

Two species, Fruit Flies (*Drosophila* spp.) and Mealworms (*Tenebrio* spp.) have been used by many aviculturists and their value in biological research has led to the development of very refined culture techniques (e.g., Galtsoff *et al.*, 1959, and Peterson, 1953). It should be mentioned, however, that *Drosophila* are undesirable for all except very small birds because of their tiny size which makes their culture inefficient. When feeding them to those small birds which have difficulty capturing flying insects, it is best to use a vestigial wing mutant or arrange the culture bottle with one tiny escape hole so that the birds may wait there for them to walk out. Mealworms are perhaps used more than any other insect by aviculturists but, as is well known, many birds should be fed them very sparingly. Galtsoff *et al.* (loc. cit.) and Peterson (loc. cit.) mention other insect species which also might be useful to culture for birds, but none of them seems to possess as many desirable qualities as those already considered.

Silk worm pupae, which are obtainable commercially, are a rather expensive food but have been used by several aviculturists (e.g., Astley, 1907, and Neunzig, 1939). In the U.S., *Promethea* silkworm pupae can be obtained commercially for about five cents each.

Insect Capture

Entomologists have developed many methods of capturing insects which can be fruitfully applied to aviculture.

Trapping is an excellent way of supplementing the insect diet of birds since it yields a wide variety and involves a minimum amount of work.

Night light traps of several types may be constructed to capture insects (see Peterson, 1953, for details). Such traps may be connected to a finely-screened cage so that the insects fall in and cannot escape. The use of an electric fan blowing downward from above the light increases the yield. The deleterious effects of light at night can be minimized by covering the top of the cage with opaque material and baffling the light at the opening or running a long, angled leader to the cage through which they would fall. Filtered ultraviolet light (black light) is very effective in bringing in insects but it is very dangerous to look into such a light.

Mercury vapor lights placed in front of a large white sheet attract many insects at night. These, of course, must be netted by hand and kept until morning.

During the day, insects can be attracted in large numbers to rotting fruit or meat hung in an outdoor flight and screened to prevent the birds from eating it.

"Sugaring" (using stale beer and brown sugar) often brings in many noctuid moths by night and a few butterflies and other insects by day. These may be captured by hand or the mixture may be brushed on the inside of an outdoor flight so that the birds can capture the insects (some moths will remain at the mixture until dawn while others may seek refuge in the vegetation in the cage).

Sweep nets are available commercially or may be constructed (see Peterson, 1953). These are best used in fields and by sweeping back and forth large numbers of insects may be captured and dumped into outdoor flights or into finely-screened indoor cages. The birds, of course, will pick out what they like.

Outbreaks of caterpillars can sometimes be discovered which makes practical the collecting of such species by hand. As is well known, hairy and spiny species are rejected by most birds.

If an ant mound is discovered, ant pupae can be collected easily using a method described by Bennett (1959). According to Naether (1955) live ant eggs (pupae) are in themselves a complete food.

Earthworms (*Lumbricus terrestris*) make excellent food for certain birds. These can be collected in huge quantities during the warmer months, particularly after rains. James Hartshorne (pers. comm.) has developed a very efficient technique by which he was able to collect as many as 500 of these worms in an hour. A dull, miner's lamp is worn on the head while a small bucket is hung around the neck. By crawling along slowly on hands and knees over the low-lying fairways of a golf course the number of worms captured on a good night should only be limited by one's speed, dexterity, and endurance. *However*, earthworms are extremely dangerous to use unless they are free of gapeworms, coccidia, and insecticide residues.

Lumbricus terrestris can be cultured using the methods developed for organic gardening (see Barrett, 1955) or biology (W. N. Ness in Galtsoff, *et al.*, 1959). The latter reference also contains a method of culturing the small white earthworm, *Enchytraeus albidus*, which he claims is an excellent food for small fish and amphibia.

Lumbricus terrestris may be kept alive several days by refrigerating them at about 40° F. We froze large numbers of them in little packets for use in the winter, the only drawback being that they become slightly mushy on thawing. Before freezing earthworms examine each individual to make sure it is alive.

"Meating Off"

When a bird is brought in from the wild, there is often a problem in getting it to eat dry mix if it is exclusively insectivorous. This process is termed "meating off" or "breaking off". This may be attempted in several ways. Conway (1957) states: "The normal behavior of

some problem feeders may be utilized to change their habits. An example is certain warblers which will not feed readily when newly captured, but which will drink. The trick is to keep them warm and dry and gradually to add insectile food to their drinking water. In a little while the warbler is drinking a soup, then a mash, and finally eating our normal moist insectivorous mixture." He goes on to describe other methods used with woodpeckers and kingfishers. Another method is used more widely. The insect larvae are merely placed on the insectivorous mix and the birds inadvertently eat some of the mix in eating the insect. The number of insects put on the mix is slowly reduced as the birds learn to eat the mix. This process might be accelerated by putting a small dab of honey or nectar paste on each insect so that some of the mix adheres to it.

"Meating off" should be done with extreme caution. The birds should be watched carefully during the process to determine whether they are eating the mix. More sensitive species should not be pushed too fast, and may die if forced. One reason for this is that the change in diet is too abrupt and they cannot make a rapid enough physiological adjustment. Perhaps the best way is to give the birds a good meal of pure insects in the morning and evening and do the "meating off" in between. Some birds can never be trained to eat a dry mix. Generally speaking, even though softbills eat a mix, they should be given as many insects as possible throughout the year and particularly during the molting and breeding seasons.

Automatic Feeding of Live Insects

The problem of leaving birds which will eat only moving insects may be solved in several ways. Various baits (see above) will always attract some. A day's supply of wax moth larvae can be left in a dish of water where they will float and remain alive for at least eight hours. This method could also be tried with other insects. Cultures or live pupae may be left in containers from which the larvae or hatched adults can escape one at a time and be captured by the birds. Certain non-flying insects (e.g., crickets) can be left in straight-walled glazed dishes. The problem may be completely solved by releasing large numbers of any desirable insect species in a cage from which they cannot escape or crawl under things.

If the birds will eat insects which are not moving, they may be left with a large supply of pupae, or in cold weather with sluggish live adults and larvae. Frozen insects can also be used in this case but should not be left more than a day in warm weather or six hours in hot weather.

Another widely used method of obtaining insects for birds is simply cutting a hole in the cage to release the pair after the first egg (or all)

is laid and letting them forage in the wild (Ivor, 1943). However, it is best to give the birds an easy way of finding the hole again once they are out. By painting around the hole and by placing a perch so that it projects both in and out of the cage below the hole, the chances of the birds returning without difficulty may be greatly increased.

Food Mixtures and some Nutritional Considerations

It is quite possible to develop an inexpensive food mixture which is adequate for a single species. We have kept several species of thrushes in perfect condition on a mixture developed by Dilger (1959). However, this mixture was completely rejected by several parulids as well as Baltimore Orioles (*Icterus galbula*). It consists of one-third " Big Red " dog meal, one-third dried " flies " (actually aquatic bugs and other invertebrates), and one-third turkey starter mash. Starter mashes, in addition to turkey, have been developed for chicks, quail, pheasants, and ducks and any of these might be used in such a mix. The three components are mixed with cottonseed oil until slightly moist which greatly increases palatability as well as being an additional source of vitamins and fatty acids. The cottonseed oil should not remain in the food more than a few days. The reason for this is that the unsaturated fatty acids cause slow oxidation of vitamin E and to a lesser extent vitamin A. Cod liver oil is much worse in this respect (Scott and Norris, 1959, and Scott, pers. comm.). This oxidizing quality may be essentially eliminated by adding an antioxidant such as " Santoquin " which is used in chicken mash (0·01 per cent). Then, of course, the mix may be stored with the oil in it.

Self-choice experiments have been useful in helping to determine the relative number of various dietary components needed by chickens. Each bird is given a choice of a variety of foods and the amount of each eaten per day is measured. However, only by averaging the amount of each material taken by a large number of individuals was this method useful in formulating an adequate diet. Certain birds may take up to ten times more or ten times less than the average. These individuals were not healthy (Scott, pers. comm.). In self-choice diets for cage-birds similar experiments can be performed. These might include a wide variety of different seeds for finches or for insectivorous birds, a selection of several insect species or several commonly used wet or dry foods or an array of various insectivorous mixtures.

If mixes are kept in a cool, dry place the nutrients do not deteriorate and molding is rare. However, as soon as any excess moisture is added to a mix it will begin to decay and mold. If the mold happens to be *Aspergillum* spp , there is a great danger of the birds exposed to it

developing aspergillosus which is a deadly infection (Chute, 1959). *Aspergillum* will also grow well in wet, dirty cages. If a dry mix is developed and if it is not allowed to get any excess moisture in it, it may be left in a cage for several days. However, after this time a fresh supply should be given simply because it is actually a self-choice diet and the birds have, hopefully, picked out what is best for them. To maximize self-choice the mix should be fed in a flat, shallow container.

On the subject of vitamins the findings of nutritionists discussed by Scott and Norris (1959) will be considered. Ordinarily vitamin supplements are not necessary if the animal is fed a diet which has been scientifically determined to be perfect but, since these are available for so few birds, it is best to give birds some extra vitamins. We have supplied "Zymadrops" because they contain vitamin D 3 which is the most active form of vitamin D for the chicken. The recommended dosage has not been determined for many birds. However, since vitamins are expensive and since giving great overdosages may be harmful, it may be possible to arrive at a rule of thumb for dosage level based on their review of vitamins in poultry nutrition. This rule of thumb is based on some extremely crude assumptions: (1) All birds need about the same amount of vitamins as a young chicken; (2) all birds eat the same amount of mix per day in proportion to their body weight as a chicken; (3) the vitamin which is in least supply in "Zymadrops" relative to the needs of the chicken should be used as an index even though the relative amounts of the other vitamins given will then exceed that needed by the chicken; (4) the bird obtains no vitamins from its diet. Based on these assumptions 2 cc. of "Zymadrops" vitamins should be added to each pound of food mixture. If insects are fed and the bird is the size of a canary put two drops per day on an insect fed to it. We have found that it is very inefficient to add vitamins to the drinking water since it must be changed frequently and most of it is wasted. With birds that eat only seeds, however, this is the best method available. Seeds which have been soaked in vitamins retain these on their coats, but these are husked by many bird species and the vitamins are not ingested (Dr. Claude Bice, pers. comm.). Scott and Norris (1959) also point out an interesting fact about raw fish and the heart and spleen of warm-blooded animals. These contain thiaminase which destroys thiamin (vitamin B_1). Dr. Robert Goodwin (pers. comm.) found that Black Terns (*Chlidonias niger*) fed on raw fish developed symptoms of severe thiamin deficiency.

Norris and Scott (1959) bring out some other facts of general interest about dietary components. Dry powdered milk may be a useful addition to the diet in a low percentage but other carbohydrate sources should be supplied because at least some birds cannot digest

lactose. Torula yeast is very low in selenium and should not be used as a sole protein source. Scott (pers. comm.) considers brewer's yeast to be better for several reasons and this is not low in selenium. He also performed some interesting experiments with sterilized ground chicken feathers as a component (5 per cent) of pheasant mash. Ring-necked Pheasants in a crowded pen which were fed this mash did not pick while the controls did. The addition of ground feathers seems to fill some dietary needs of the pheasants and the addition of 5 per cent to insectivorous mixtures could possibly be useful.

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THE BREEDING OF THE RUFUS-BELLIED BABBLER (*Dumetia hyperythra*)

By Captain R. S. DE Q. QUINCEY (Hereford, England)

Shortly before Sqn.-Ldr. Everitt left to take up his appointment with Mr. Boehm in the United States, he told me that he had two pairs of small Babblers that he thought I might like to have. One of these pairs he informed me is called the Rufus or Red-fronted Babbler, a small, striated, olivaceous bird with a rufus frontlet, of which one or two further examples have arrived—and the other, unnamed pair have now been identified by Mr. John Yealland as the Rufus-bellied Babbler (*Dumetia hyperythra*). These little birds are darkish olivaceous brown above, and cinnamon rufus below, very slightly brighter on top of the head, and a distinctive feature is a somewhat fan-shaped tail, the central tail-feathers being the longer. They carry their tails straight out, and not upright like a Wren or Tailor-bird, and sometimes when hopping about they wag the tail from side to side. A photograph of one of the adult birds (I really can't tell which, but probably the cock) on a stone at the edge of the stream in their aviary was taken by David Attenborough last summer. It shows the general appearance of this little bird rather better than any description of mine could portray it.

The birds duly arrived and were wintered in an indoor aviary. They were always together, and I concluded they were a true pair, although to me they appeared to be identical. In the spring (1960) I turned them out into a very densely-planted aviary, where they had as companions a pair of Red-flanked Zosterops, a pair of Red-flanked Bush Robins, a pair of small Tanagers, and one Violet-eared Humming Bird. In the early summer they built a dome-shaped nest, laid, and hatched out two young ones, which died at about five days old and were thrown out of the nest. They appeared to be quiet for a little while, and then I discovered they had built three more nests, possibly to deceive inquisitive searchers ! They were all dome-shaped, almost Wren-like nests. One was built about 4 inches above the ground in a tall tussock of grass, and the other two were in a small planting of *Lonicera nitida* about 2 or 3 feet above the ground. They laid in one of these nests, but apparently only one young was hatched on this occasion. However, this left the nest sometime early in July. At this time we were destroying wasps' nests, so plenty of wasp-grubs and live ant eggs (also plentiful just then) were available. Within three weeks of leaving the nest it was virtually impossible to tell the young one from its parents. At about this moment the hen built again and laid three eggs, which I should say are approximately the size of a Wren's egg, blotched and spotted more at the thick end

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RUFUS-BELLIED BABBLER

DUMETIA HYPERYTHRA

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with dullish red-brown markings on a greyish all-over ground colour, something like the markings on a Robin's egg, but the whole effect a somewhat more blue in tone. It is a little difficult to be certain of the period of incubation, but I would say it was about thirteen days. Two young ones were hatched, but these disappeared completely within two days—possibly mice—which I hope to exclude once and for all when these aviaries are rebuilt this or next year. I should think the young bird that was reared to maturity was in the nest about eighteen days, but these small birds are very secretive, and it is a little difficult to intrude too much on their privacy without upsetting things. When the hen went to nest again the cock bird continued to guard or keep near the youngster, when he was not taking his turn at incubating. This young bird is now completely independent, and seems to be in robust health despite an appallingly wet late summer. When I wrote and told Sqn. Ldr. Everitt of this breeding he was quite sure it was a "first."

Apart from Shamas, which seem to breed every year here, the only other birds that have done anything in 1960 are a pair of Golden Tanagers, which hatched two young, and which "something" removed from the nest when about eight days old. They were in a somewhat crowded aviary. The Brazilian Wood Nymph (*Thalurania glaucopis*) hen has tried to build twice, but has been so persecuted by the cock bird that, on both occasions, she seems to have given up hope. I hope she will not try again until next year. Rufus-bellied Niltavas built (in a nest-box), the hen laid three eggs, and was then picked up dead, although looking in perfect form. I put two of her eggs into a Spotted Flycatcher's nest, but this was destroyed by cats two or three days later. Red-flanked Bush Robins built (in a nest-box), but later the nest was destroyed, and we found one egg had a dead chick in it. Daurian Redstarts also built in a nest-box but the hen was found dead on her three eggs—all really rather unsatisfactory.

Loo Choo Robins nested in December, 1959. The hen was sitting on four eggs, in a nest-box in an outside flight, while snow was on the ground. She even spent Christmas Day on her nest! I took the cock away as he started moulting, and she gave up her nest after sitting for about four weeks! Then she went into a moult. When I put them together again in the spring she appeared quite friendly, and then suddenly hurled herself on the cock bird, whom she blinded or knocked about so much that he became blind, and had to be destroyed. She moulted again recently, and a new cock bird has also just come through his moult. I do not think I shall put them together before next spring, if they both survive the winter.

As described above, Captain R. S. de Q. Quincey has bred the Rufus-bellied Babbler (*Dumetia hyperythra*). It is believed that this may be a first success.

Any member or reader knowing of a previous breeding of this species in Great Britain or Northern Ireland is requested to communicate at once with the Hon. Secretary.

* * *

NOTES ON MUTATIONS IN MASKED LOVEBIRDS

By D. L. McKenzie (Winchelsea, Sussex, England)

Mutations of the Masked Lovebird are still rare in this country. On the Continent, blues, yellows, and whites are fairly common but are generally of Japanese origin and are not particularly hardy. Blues that I have imported have not lasted many months and have not been really strong enough to risk outdoors. Yellows and whites are very poorly coloured, the yellow being heavily suffused with green and the whites with blue.

Two years ago I was fortunate enough to procure a British-bred blue hen and two green-blue cocks. Last year from one of these cocks and the blue hen I had five young—four blues and one green-blue. Early this year I was offered a yellow cock, one of an imported pair, the hen having died. As the cock was well acclimatized I purchased it and have mated it to the green-blue hen bred the previous year. From three rounds (the first farmed out to foster-parents) I have bred eight young—three yellows, three blues, and two greens (presumably split for yellow and possibly for blue and white as well). The young yellows are a better colour than their parent but still very variegated.

These British-bred mutations are equally as hardy as normal greens. The blues can be distinguished on hatching by the colour of the down, which is pink instead of the normal orange. The beak is orange in colour until several weeks after leaving the nest, when it changes to a pale pinkish-bone colour. The young yellows have the normal orange down on hatching and cannot be determined until they start to feather.

The flight feathers of the yellows are white, the remaining wing-feathers being heavily suffused with pale green. The body colour is mainly yellow, turning to green on the abdomen. The back is yellow from the nape of the neck, turning to green on the rump. The mask is brown instead of the normal black, and the beak is red.

The blue body-colour of these British-bred birds is much deeper than the rather pale colour of the Continental birds and two of my first-year cocks are really deep in colour.

I have constructed six new flights, 6 feet by 3 feet by 6 feet high

for more intensive breeding next season. These flights are half wire and half boarded. I find this an ideal compartment for one pair to breed in and leave them with their nest-boxes all winter. Lovebirds generally I find to be late breeders, first broods appearing in late June and early July, so that they are still rearing young in October. This suits them quite well with the usual mild autumns we have in the south and I am fortunate in that my aviaries are in a very sheltered garden and all face south.

Young birds definitely need more shelter and even their flights should be well protected. They need a good draughtproof shed into which they should be driven at night. They seem very susceptible to cold and wet in their first winter.

I feed mainly canary seed with a little Indian millet but they eat very little of the latter. Whole oats and striped sunflower I throw on to the floor of the earthed flights and I feed as much groundsel and chickweed as I can find. On this diet they keep particularly healthy, but in some nests the young are badly feathered and often leave the nest in a semi-naked condition, not completely feathering for a further week or two. This is obviously due to bad feeding by the parents and may be due also to their not being in perfect condition themselves. Feather-plucking, mainly at the back of the neck is another annoying fault with hens, but the young invariably feather perfectly shortly after leaving the nest.

I have had French moult in one nest this year but fortunately not amongst the blues. This is not uncommon, I believe, with lovebirds and the young are best destroyed.

Next season I intend to limit my breeding activities to the Masked mutations, keeping only the best breeding pairs from my other birds as foster-parents.

Although a clutch is usually five eggs, they seldom rear more than three, and two is more normal. It is a pity to waste these other eggs and there is no difficulty in fostering out to other breeding pairs soon after hatching, leaving each pair with two young to rear. If all the first-round eggs are removed soon after the clutch is laid they quickly go to nest again. The first eggs can be farmed out to normal birds already sitting and an extra round is thereby obtained without the mutation pair being unduly taxed.

The big problem now is the introduction of fresh blood. With very few blues in the country and the Continental birds being so unreliable this is not going to be easy.

Mr. E. N. T. Vane is of the opinion that Continental mutations of Japanese origin are of mixed Masked and Black-cheeked Lovebird stock. The brown mask of my yellows might indicate this. I have noticed that all young green birds bred from the original yellow cock show a reddish brown tinge to the mask especially on the forehead

on moulting into adult plumage. The masks of the young blues from this bird are quite normal.

I now have a stock of eight blues, five green-blues, and three yellows. Some of these will have to be paired to normals in order not to inbreed too closely.

* * *

"A SELF-REARED MANDARIN"

By VISCOUNT CHILSTON (Maidstone, Kent, England)

It may seem paradoxical that in a year of much arduous but successful rearing the one breeding result which has given me more pleasure than any other was the one which was achieved without my aid at all—in fact even without the aid of the infant's own kind. The latter fact was what seemed to me to be of interest and perhaps to help to explain the comparative ease with which feral colonies of Mandarin Duck have from time to time become established in this country.

I had kept a couple of pairs of Mandarin for several years without their having ever—to my knowledge—bred. This year (1960) seemed no exception, until one day at the very beginning of May—during an exceptionally cold and wet spell of weather—I saw, darting nimbly over the surface of my lake—what I instantly recognized to be a baby Mandarin. I have bred many Carolinas, and they were breeding this year, but there was no mistaking the yellower colour, the large eye with its pronounced streak, the longer legs, and the more " aristocratic " head and bearing—in fact the altogether more intelligent and self-sufficient air which distinguishes the Mandarin from " lesser breeds ".

For, though it is evident that a Mandarin egg must have been laid in one of the several Carolina nest-boxes placed on the island in the lake, the duckling's connection with the pair of Carolinas, who in the first few days appeared to feel some responsibility for it, was of the loosest possible description. Unlike most other ducklings, it seemed neither to need nor to wish for their protection. Indeed, so independent was this little creature that within a few days of hatching it was coming up on to the land with the other waterfowl at feeding time and—to my horror—eagerly picking up and swallowing hard corn. It knew no fear—either towards myself or the other birds—despite the fact that it was continually being pounced upon by a vicious Magellan Goose, who once even caught it and threw it about a yard into the air.

Partly through its own indefatigability at catching flies on the water and partly through the aid of poultry pellets (which I tried to put in its way rather than corn), it grew rapidly and strongly. Every feeding time, if it was not already there waiting nonchalantly among

the adult ducks and geese, there was a moment's apprehension—and then suddenly it would appear as from nowhere, sleek and spry as ever. I never made any attempt to lay hands on this charming little creature for fear of destroying its confidence ; so it was never pinioned, and though, when it began to fledge I debated whether to feather-clip it, I never did so, deciding to hope it would stay of its own accord. Instead, as soon as its sex (a male) was clear, I got it a young mate to try to tie it by invisible bonds.

However, though now a magnificent specimen in full nuptial plumage, he pays no attention whatever to this one or to either of the other females of his own species, but prefers to consort with some Carolinas kept on a stream in another part of the grounds, whither he flies daily—swift, silent, and agile as a Woodcock, as he flits through the trees—after feeding with the other birds beside the large lake. Only in this choice of company is the influence of his foster-parentage perhaps discernible.

* * *

NOTES FROM THE WILDFOWL TRUST

By S. T. JOHNSTONE (Slimbridge, Gloucestershire, England)

We have, since 1957, received great co-operation from the New Zealand Government in our effort to acquire a comprehensive collection of waterfowl that are indigenous to the Dominion. In that year four species were caught and sent by polar air route to us at Slimbridge. These were the New Zealand Grey Duck (*Anas superciliosa superciliosa*), New Zealand Scaup (*Aythya novae-seelandiae*), New Zealand Brown Duck (*Anas aucklandica chlorotis*), and Blue or Mountain Duck (*Hymenolaimus malacorhynchos*).

Early in 1960 we heard that the Department of Internal Affairs had hatched and reared some Shoveler and in June two pairs of these interesting birds duly arrived. They settled down well after the rigours of quarantine and it is hoped that in due course they will breed. A further two male specimens of the exciting Blue or Mountain Duck also arrived and it is hoped to dispatch us some females of the species in the coming year

Having regard to the generosity and trouble taken by the New Zealand authorities on our behalf, we are pleased to report that three of these ducks have now been bred here : the Grey Duck, the Scaup, and now in 1960 the Brown Duck. Two pairs of Brown Duck that came in 1957 have never become very tame and spend a great deal of the daylight hours hiding in the grass and rushes of their enclosure. One pair shared a pen with a pair of Cereopsis Geese but neither showed any interest in the other. Nesting sites were provided in the shape of boxes at ground level, cover fabricated from willow wands, and cider

barrels raised some two feet from the ground. All these were used a great deal as refuges from the public gaze and it was this habit that accounted for the failure to find the nest before the duck commenced incubation. It was thought that the missing duck was merely hiding in the cider barrel but she moved and was seen to be covering some eggs. It was decided to leave her to her own devices and she was undisturbed for three weeks. On going to the barrel after this interval four large creamish-buff eggs were found deserted, two of which were addled and two infertile. These averaged 52 g. in weight and measured 57 mm. by 42 mm. A point of interest was that there were no broken shells in the nest and a complete absence of down. Although the *Dendrocygna* pull no down and the swans very little one would not have expected this to be characteristic of *Anas aucklandica chlorotis*. During this investigation both birds were invisible in the undergrowth and we assumed that we would have to wait for another year for successful breeding. Two days later, to our immense pleasure and surprise, the duck appeared on her pond with three dark brown ducklings. Both parents and babies were caught up and put into the Guinness Aviary in order to keep them free from the attentions of the Cereopsis and vermin. The food offered consisted of ants' eggs, biscuit, and turkey starter crumbs ; a small amount of the last disappeared overnight but from the state of the turf in the aviary it was apparent that a great deal of nocturnal worming was taking place.

Examination of a duckling showed there to be little contrasting downy pattern and save for four light spots on the back and a small area of the belly, the overall appearance is of dark mahogany. The bill is large and slate-blue in colour and the tarsus is grey. It is suggested that the ducklings should resemble those of the Chestnut-breasted Teal, but my impression is that they are quite different from any other ducklings we have reared at Slimbridge. Hatched about the 17th September the young appeared to be fully grown by the middle of November.

Apart from the Brown Ducks, some 1,200 birds of ninety different kinds were reared in our collections but we had our disappointments. The Trumpeter Swans laid five eggs, three of which were fertile, but the pen failed to bring off any cygnets. The only Pink-footed Goose to lay hybridized with a Greater Snow Goose. Three Hooded Merganser ducklings hatched but failed to survive more than three days. The use of some straw in the nesting-boxes that proved to have a heavy infection of *Aspergillus fumigatus* accounted for the deaths of Ross and Emperor goslings, a whole brood of Barrow's Goldeneye, and five young Smew.

On the credit side the Magpie Geese reared four young, the Bewick's Swan four, and the Black-necked Swan five cygnets. In the aviary the Spotted Whistling Duck hatched and reared twelve young, the

Copyright] NEW ZEALAND BROWN DUCK FAMILY AT SLIMBRIDGE, OCTOBER, 1960 [Philippa Scott

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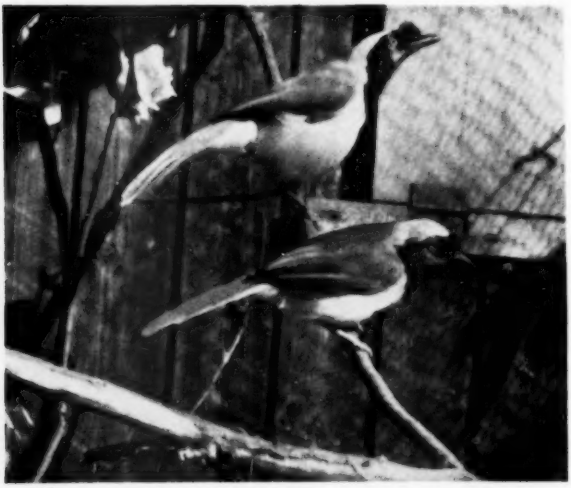
Copyright] *[Photo: Alec Brookshank*

BLACK-CROWNED WAXBILLS (*Estrilda nonnula*)



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PERUVIAN GREEN JAYS (*Xanthura yncas*)

Female below, and male above, starting to display

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Laysan Teal reared three, the Hartlaub's Duck three, and the Cape Shoveler three.

Among other interesting species the following were hand-reared : Southern Red-billed Whistling Duck (*Dendrocygna autumnalis discolor*), Black Brant (*Branta bernicla orientalis*), Argentine Red Shoveler (*Anas platalea*), New Zealand Scaup (*Aythya novae-seelandiae*), Australian White-eye (*Aythya australis australis*), Barrow's Goldeneye (*Bucephala islandica*), Common Goldeneye (*Bucephala clangula clangula*), and Smew (*Mergus albellus*). There were over fifty Marbled Teal and over thirty Ringed Teal. The Ne-ne flock now numbers over one hundred birds, twenty birds being bred this year at Slimbridge, five at Peakirk, and four at Leckford.

* * *

BREEDING RESULTS AT THE KESTON FOREIGN BIRD FARM DURING 1960

By Edward J. Boosey (Keston, Kent, England)

With a few exceptions such as Western Bluebirds, African Grey Parrots, and blue Ringnecks, the 1960 breeding season here at Keston was one of the most disappointing we have ever had. This may have been partly due to the abnormal weather which, although it was so sunny in May and early June that it seemed we might be going to have a repetition of the lovely summer of 1959, was thereafter literally a complete washout, with frequent thunderstorms, torrential rain, and no spells of settled weather at all.

The following parrakeets were bred : blue Ringnecks, lutino Ringnecks, Layard's, Golden-mantled Rosellas, Stanleys, yellow Red-rumps, Splendid Grass Parrakeets, Turquoisines, and Bourkes. Also Cockatiel, Fischer's, Masked, and Peach-faced Lovebirds, and many thousands of Budgerigars in all the various colour varieties.

Others, which hatched young but failed to rear them were : Pileated Parrakeet, Princess of Wales's, Plum-headed, and our male lutino Plum-headed mated to a normal-coloured hen.

A pair of African Grey Parrots reared three fine young ones, and a pair of Blue-fronted Amazons two ; while a pair of Cuban Amazons and a male Festive mated to a female Red-throated Amazon (both of which pairs had bred successfully in previous years) hatched young which died in the nest when about half-grown. A pair of Red-sided Eclectus again had clear eggs.

Mountain Bluebirds and Amethyst Starlings went to nest but failed to rear any young, but Western Bluebirds did very well, one pair rearing seven young and another pair six. There were, however, several losses after the young were fledged which may have been caused either through injury to the skull or from vertigo—the symptoms of

both being much the same. All the young ones were excellent specimens, but were terribly wild, battering about if anyone went near their aviaries. Next year (1961) we are going to have the top of the flights entirely boarded over, as most of the damage is, of course, done when they bang their heads against the wire roof of the flight. A cock Mountain Bluebird mated to a hen Western reared one young one—a female.

A pair of Australian Crimson Finches went to nest with all the zeal of Zebra Finches, rearing one in their first nest and two in their second. By then it was late in the year and their nest-box was removed, but they continued to carry nesting material until well into the winter.

In 1959 we received among a consignment of Common African Fire-Finches a male which was rusty-orange in colour instead of red, and a female which was equally distinct, the beak in both cases being orange instead of red. The pair spent the winter in an aviary to themselves and went to nest in the spring rearing two in their first brood and four in the second, all of which take after their parents in colour. On their arrival we sent a description of them to Mr. Macdonald of the British Museum and he replied that he did not know of them at all and that they had no similar skins at the Museum. He thought they were probably a colour mutation, but that as we had received a pair and not, as is much more usual, just a single specimen, there might be a small colony of these unusually coloured Fire-Finches established and breeding apart from the others.

That this may be so, or that they may even be a hitherto unrecorded local race, has been rather interestingly borne out by the behaviour of ours. All six young ones, which have turned out to be five cocks and one hen, are in an aviary together with two normal-coloured hens. Yet, although all the orange cocks are interested in the orange hen, they ignore the two normal hens completely. In any case I mentioned in a letter to Mr. Macdonald that as the place where a new colour variety of a bird was first propagated is so soon forgotten, it might be desirable to incorporate Keston in their name, and he replied that he thought they might suitably be called the Keston Fire-Finch ; so, adding a word to denote their colour, we propose to call them the Keston Orange Fire-Finch.

Two hen orange Roller Canaries mated to a cock Hooded Siskin went to nest and hatched young which were thrown out of the nest soon after they hatched, and as we felt that the Siskin was in some way responsible for this, we removed him when they had gone to nest again. One hen, however, got egg-bound and the eggs she had already laid were put with the three the other hen had just started to incubate, and she eventually hatched two young ones which she reared single-handed. When first fledged they were little brown Linnet-like birds with no trace of red or orange, but by now (December) they take very

much after their father in appearance, except that their body colour is orangey-copper instead of the flame-red of a Hooded Siskin. Rather unusual is that, whereas most hybrids are about intermediate in size between their two parents, these two are much the same size as a Roller Canary, which, of course, is a considerably larger bird than a Hooded Siskin.

A supposed pair of Azure-winged Magpies (*Cyanopica cooki*) nested in a privet bush in our large pond aviary, but shortly after incubation had started, the smaller of the two was found scalped, and as all the eggs were clear the birds were probably both hens, the larger of which had turned upon and killed its companion.

The breeding here this season for the first time in captivity of the Pretty Warbling Finch (*Poospiza ornata*) has already been fully recorded in the *Magazine* by Mr. Cummings, and a pair of Ringed Warbling Finches (*Poospiza torquata*) also went to nest, but failed to rear any young, probably because their nest was built close to the ground, and while sitting they were disturbed by mice.

In the spring we received several pairs each of two rarely-imported Waxbills, namely the Black-bellied Fire-Finch (*Lagonosticta rara*), and the Black-crowned Waxbill (*Estrilda nonnula*). The Black-bellied Fire-Finch is very handsome, being a rich claret-colour with the breast and abdomen black ; while the Black-crowned is to my mind one of the prettiest of the Waxbills, having a sooty black cap and tail and dark slate-grey back and wings. The under parts are chalky-white faintly tinged with grey, and a narrow line along the side of the body, just below the wings, is bright crimson, as are the rump and flanks. The upper mandible is red and the lower one blackish. We have retained two pairs of each species and hope to have a shot at breeding them next season. Last year's liberty pair of Australian Crested Bronze-winged Pigeons wintered successfully in the garden and went to nest in the same tree rearing four young ones in two broods. The hen, however, was not seen again after the second two fledged, so must either have died or been killed, as it is most unlikely that she would have strayed.

We tried Barbary Doves at liberty and possibly because they had been kept in an aviary instead of a cage before being let loose, they quite belied their reputation of being " stupid birds at liberty ", as they flew quite strongly and roosted in sensible places well protected from owls. They are difficult birds to sex but I think we had three cocks and a hen, and the latter went to nest, but disappeared while sitting. Nevertheless, we caught up the remaining three in the autumn and having since obtained three more shall hope to let out six next year. They are tame and charming and their pale colouring makes them very conspicuous and decorative at liberty—added to which, of course, is the delightfully soothing sound of their coo—the nicest perhaps of that of all doves.

The wild Turtle Doves, which normally are so nervous as to be quite unapproachable, gained confidence through coming to feed with our Barbary Doves and Crested Pigeons, and it was a rare pleasure to be able to get close enough to them to appreciate what truly beautiful little doves they are.

A particularly sad loss was that of three specimens of the rare and beautiful Jardine's Parrot. We started the season with two pairs of these birds which we had had for over a year, so there seemed every hope of breeding from them. Then one night a thief gained access to our terrace aviaries, and finding the doors of the flights padlocked, contented himself with opening many of the shelter feeding doors. Actually few birds escaped, but among them had to be the best pair of Jardine's Parrots, and as the hen of the other pair died suddenly about a week later, we decided to part with the remaining cock, as there seemed little hope of being able to obtain a mate for him.

The hen of our pair of Peruvian Green Jays (*Xanthura yncas*) died towards the end of the summer, but the accompanying photograph of them was taken by Alec Brooksbank the previous year. When first received from an aviculturist in Cornwall, their plumage had already undergone the same colour change in captivity as takes place in the case of the Hunting Cissa—that is to say the green areas had gone blue and the yellow ones white. It may, therefore, be of interest to record that by the end of the two years we had them at Keston, the blue of the upper surface had become suffused with green, and the white of the under parts with yellow. This may have been due to a combination of three factors : they were the sole occupants of a roomy planted outdoor aviary where in summer they were able to capture for themselves a considerable quantity of live insects, etc ; their home-made insectivorous mixture contained soya flour and raw grated carrot ; and during the moult they were kept constantly supplied with elderberries—the elder being one of the comparatively few things that really revel in our very chalky soil, which is so deadly to many of my own favourites, such as rhododendrons and azaleas.

Another loss was that of our best pair of lutino Ringnecks—plus their three young ones. The latter were dead in the nest by the time their mother's body was discovered, and just to round things off, the cock also died a few weeks later.

A further casualty was the last of our Brown's Parrakeets—a rather elderly male who at one time nearly murdered his Brown's wife, but had produced a brood of hybrids when mated to a hen Golden-mantled Rosella.

* * *

BREEDING OF THE SMOOTH-BILLED ANI

(*Crotophaga ani*)

By A. H. ISENBERG (Portola Valley, California, U.S.A.)

Four years ago I received, from Holland, five Smooth-billed Anis ; it was the first time I had ever seen these birds offered. All arrived in good shape but rather thin. After three weeks in a holding aviary they were fit to release into one of our largest aviaries, approximately 50 by 40 feet and 9 to 15 feet high, plus a large unheated shelter.

In 1958, a nest was built in the shelter among dry branches on top of a " holding aviary ". The young hatched but none was reared. In 1959, several young hatched but only one was raised by hand and is now a most affectionate, tame bird. It is not tolerated by the others, so is kept in one of the " holding aviaries ", where it is menacingly visited by the adult Anis.

This year (1960) the Anis had killed one of the original five and then nested about 10 feet off the ground in an alder tree, which is quite dense from many prunings. The nest is quite large and made of leaves, twigs, and grass. The eggs were greenish-blue with a chalky white coating. All four adults seemed to incubate and guard the nest and, when the young hatched, all four helped in feeding.

This year when the young left the nest I did not take them, as the weather was quite warm for all of July. One young was reared from the first nest and one was thrown out. We tried to rear this one by hand, but after several weeks, it succumbed. The other matured well. Four young were raised from the second nest in July and, again we had fine weather. After the five young were well on their way, the adults killed two of the four adults before we could separate them. This action was rather baffling as Anis are so gregarious in the wild. I did notice that one of the four adults did not keep up with its duties of feeding the young, but the others did.

It was most amusing to toss a mealworm into the air and watch these grotesque and rather clumsy-billed birds very adroitly catch the worms and rush off to feed the young. They never carried more than one mealworm at a time, so it can be imagined how many trips the parents made to feed their raucous young. The mealworms were always carried by the head and disappeared down the young like lightning. Pieces of horse-heart and much ground meat was fed. The ground meat I sometimes mixed with yellow corn-meal, wheat-germ, and pablum. Anis catch a lot of small insects on the lawn. These birds are very quick in their actions.

The flock of seven Anis is fun to watch, trying to outdo each other when mealworm time arrives. Anis are great sun worshippers and continuously stretch out in the sun. I have watched Groove-bills in

Mexico and Smooth-bills in the Caribbean Isles and it seems they are always stretched out in the sun atop of bushes. They are most amusing birds, even though so sooty-black, but their plumage does have a shine and the feathers along the back are " shelled " quite nicely. One can't help but think of prehistoric animals when looking at Anis.

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

Arrivals of especial interest during the months of January and February number twenty-five. A second Christmas Island Frigate Bird (*Fregata andrewsi*) was brought from the Cocos Islands by Capt. D. Scorgie : it appears to be a season older than the first and of the opposite sex—evidently a female, for it is larger.

Other presentations include a Fulvous Whistling Duck sent from Uganda by Mrs. E. Wright, a Whooper Swan from Mr. Tom Spence, two Hawaiian Geese from the Wildfowl Trust, a Baikal Teal from Dr. K. C. Searle, two Nutmeg Fruit Pigeons, two Green Imperial Pigeons and a White-fronted Bronze-wing (*Henicophaps albifrons*) from Mr. A. A. Prestwich, a Chestnut-bellied Nuthatch from Messrs. G. H. and J. R. Newmark and a Military Starling (*Pezites m. militaris*) from Mrs. A. Fowler.

Two Oyster-catchers and four Dunlins, a Malachite and a Wedge-tailed Sunbird, a pair of Fairy Bluebirds (*Irena puella turcosa*) and two Rothschild's Grackles (*Leucopsar rothschildi*) have also been received.

The Hawaiian Goose was first exhibited in Regent's Park in 1832 and bred here in subsequent years. This bird bred freely in European collections, but for some reason became scarce soon after about 1900 and the last specimen, a gander forty-two years old, vanished from Clères at the time of the invasion in 1940. From three specimens received by the Wildfowl Trust in 1950–51, more than 100 have been bred at Slimbridge and at Leckford—almost half the world's total population and the classic example of how aviculture can, in certain cases, assist in the preservation of birds.

* * *

COUNCIL MEETING

A Council Meeting was held on 8th March, 1961, at the Rotary House Club, 21 Portman Square, London, W. 1.

* * *

The Society's Medal

The Society's Medal has been awarded to :—

Mrs. K. M. Scamell, for breeding the Daurian Redstart, *Phoenicurus aurorea aurorea*.

* * *

Certificate of Merit

The Society's Certificate of Merit has been awarded to :—

The Dudley Zoological Society, Ltd., for breeding Steller's Jay, *Cyanocitta stelleri*.

Arthur A. Prestwich,
Hon. Secretary.

BRITISH AVICULTURISTS' CLUB

The seventy-third meeting of the Club was held at the Rotary House Club, 21 Portman Square, London, W. 1, on Wednesday, 8th March, 1961, following a Dinner at 7 p.m.

Chairman : Mr. K. A. Norris.

Members of the Club : P. S. Bates, A. W. Bolton, Miss Kay Bonner, W. Brain, the Rev. A. Campbell, B. Dittrich, M. D. England, Miss R. Ezra, Colonel H. B. Finch, Mrs. O. L. Gent, Dr. E. F. Gleadow, Mrs. R. Goodman, Dr. R. Gottlieb, H. J. Harman, L. W. Hill, Miss R. Hill, Dr. E. Hindle, Miss S. I. Hobday, F. E. B. Johnson, Mrs. P. Johnstone, Dr. S. B. Kendall, R. G. Kirkham, Miss E. M. Knobel, Dr. F. B. Lake, A. J. Lambert, Captain J. Lee-Hudson, R. H. Mantri, R. F. Marshall, G. S. Mottershead, S. Murray, Sir Crawford McCullagh, Bart., W. R. Partridge, C. M. Payne, A. A. Prestwich, J. H. Reay, D. H. S. Risdon, R. C. J. Sawyer, H. A. Snazle, T. Spence, E. O. Squire, Newton R. Steel, P. Sutton, E. A. Tickle, P. L. Wayre, Mrs. G. Wheatley, Mrs. M. Williams, F. J. Wiltshire, J. J. Yealland.

Members of the Club, 49 ; guests, 23 ; total, 72.

R. G. Kirkham introduced the colour film *Not Ours to Destroy* which he and Terence Murphy, Director, Dublin Zoo, had made in Africa. The film starts with the party leaving the hotel at Entebbe by Land-rover. The journey took them to the Congo National Park at Ruwindi, from there into the Ituri Forest to see the pygmies, and then up to

the Murchison Falls and the Queen Elizabeth Park in Uganda ; from thence back to Nakuru in Kenya to film the flamingos. The second part of the safari took them from Nakuru to the N'gorongoro Crater, Amboseli, Tsavo National Park, and finally back to the Nairobi Reserve. In the Congo they filmed elephant, buffalo, and hippo, and in the Queen Elizabeth Park, on the way to Murchison Falls, crocodiles and birds ; at Lake Nakuru, flamingos, and at the Crater, lions, rhino, zebra, gnu, ostriches, and the various buck ; and at Amboseli, giraffe and a few more birds.

The photography was excellent, a feature being that considerable care had been taken to show the natural habitat of the various mammals and birds. The commentary, by Murphy, was concise but informative. The writer has only one criticism of this otherwise splendid production. The almost continuous, at times distracting, background music bore no relationship to the pictures—it was quite unnecessary and it would perhaps have been better had it not been added to the soundtrack.

To Kirkham is due the thanks of all members and guests for providing such an enjoyable evening's entertainment.

ARTHUR A. PRESTWICH,
Hon. Secretary.

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NEWS AND VIEWS

Peter Scott has been elected Rector of Aberdeen University.

* * *

The Avicultural Society of South Australia has changed the title of its monthly journal from *South Australian Avicultural Society Magazine* to *Bird Keeping in Australia*, commencing with the January, 1961, number.

* * *

The U.S. Department of the Interior reports a count of thirty-six Whooping Cranes in the vicinity of the Aransas Wild Life Refuge, on the Gulf coast of Texas. This is the largest number recorded since the first count in 1938.

* * *

In the *Giornale degli Uccelli*, November, 1960, and *Ornithophilie*, November–December, 1960, there are accounts by Orazio Farina, Bagnara di Romagna, of his success in rearing two (of three hatched) Jendaya or Yellow-headed (*Aratinga jandaya*) × Nanday or Black-headed (*Nandayus nenday*) Conure hybrids. This event is of particular interest on account of its being an inter-generic cross.

* * *

Forty-three species, varieties, and hybrids were successfully bred in the Adelaide Zoological Gardens during the 1959–1960 season.

Director V. D. Haggard is especially pleased with the rearing of two Mute Swans, two Green Peafowl and one Australian Stone Curlew (*Burhinus magnirostris*)—the last is a species which has become somewhat rare due to the depredations of the fox.

* * *

Breeding results, 1960. R. T. Kyme, three Golden-mantled Rosellas, nine Cockatiels, five Bengalese : Mealy Rosellas and Stanleys had fertile eggs and Pennants young ten days old, all lost through cat trouble. J. Moir, nine Cockatiels, eight Peach-faced Lovebirds, three Long-tailed, five Bicheno's and two Ribbon Finches. Derek Young, two Pennants, four Splendids, fourteen Turquoisines (all from newly-imported birds), and one blue Masked Lovebird.

* * *

At long last there appears to be a possibility of some relaxation in the Government of New Zealand policy concerning the importation and keeping of foreign birds. This has encouraged a few enthusiasts to re-form the Avicultural Society of New Zealand which has been in recess since the last war. The membership at present numbers about sixty, under the Presidency of G. Rowland Hutchinson whose name is synonymous with A. S. of N.Z.

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Dr. Edmond A. Schlesselman, Fresno, California, reports his breeding results, 1960 : Eastern Rosella, five ; Yellow Rosella, four (" these are the second to fifth ever in the U.S.A. I raised the first last year ") ; Pennants, five ; Indian Ring-necked, one lutino and three splits ; Plum-headed, one ; Moustached, five ; Barrabands, three ; Red-rumped, five ; Bourkes, ten. " I have the only ' breeding ' pair of Scarlet-chested in the U.S.A., but so far no success—eggs, but nothing else. There are two other Scarlets but the hen has never laid and egg."

* * *

Lloyd B. Thompson, British Columbia, writes of 1960 : " We had a very good year and reared six Prince Lucien's Conures, ten Ring-necks including two lutinos, two Plumheads, six Redrumps, five Bourkes, five Turquoisines. My cinnamon Lineolated had two young but she died a few days ago. A number of Lovebirds, including one pied Peachface, and eleven Diamond Doves were reared.

The liberty finches were a constant source of pleasure. While we lost a number of single pairs that were liberated we did catch up more Cordon-bleus and Fire-Finches than were let out."

* * *

Charles Everitt sends a note concerning the breeding of the Pretty Warbling Finch (1960, 171) : " If the hen Mr. Cummings refers to is the one he had from me just prior to our coming out here, as I think it

must be, I would like to point out that she did not let her chicks die in the nest. They were washed out of the nest in a cloudburst, as were the chicks of the Green Cardinals. She was such a sweet thing that I hate to see her maligned in print."

* * *

There is at present a world shortage of canary seed. It is being felt particularly heavily in Great Britain where prices are soaring. Ordinarily several thousand tons are imported annually from Australia but owing to drought little or none is available for export. Due to internal unrest only very small quantities are now coming out of Turkey. The Moroccan exporters have taken advantage of the situation by demanding exorbitant prices and the Spanish have followed their example. The result is that our leading dealers are having to ask as much as 120*s*. to 125*s*. per cwt. for the finest quality Spanish canary.

* * *

In the September–October, 1960, number of the MAGAZINE there was a breeding report of the African Ring-necked Parrakeet, by T. F. Nixon. It was thought that this might be a first success. It transpires, however, that G. S. Mottershead, Director-Secretary, of the Zoological Gardens, Chester, was breeding them at Shavington over thirty years ago. He then kept them in a large, open flight, left them to their own devices and they bred quite successfully, even freely. George Mottershead says : " I never thought much about it at the time ; in fact it would have amazed me if anybody had told me that they had not been bred in captivity before."

* * *

Charles Everitt reports from the Edward Marshall Boehm aviaries : " We have been having a terrible time during the snow, one aviary completely destroyed and another badly damaged, with complete loss of all the tropical plants therein. The loss in birds was not as heavy as it might have been but quite a number of pairs were reduced to singletons, including the Twelve-wires. Although the blizzard was exactly four weeks ago we still have a lot of ice and snow about and the Delaware River has only just been cleared for navigation as far up as Trenton. For nights on end the temperature has been in the region of 5° to 10° and only in the 20's during the day. We had a heat wave to-day (9th January) for it went up to 45° and now all the water on top of the melting ice makes walking very hazardous—not that we do much of it—but we do have to get around the aviaries. "

* * *

R. L. Blakely, Curator, Division of Birds, Lincoln Park Zoo, sends details of a new project. He writes : " The Commissioners of the

Chicago Park District have approved plans for the complete remodelling of the main Bird House. Temporary cages in the back of the building will be removed and that area will be landscaped with artificial rock. A shallow, salt-water wading pool and a deeper, fresh-water pool fed by a stream and waterfall will also be added. In the centre the large flight cage (100 ft. × 25 ft.) will be removed. This will then turn the building into one large walk-through flight cage. The recently remodelled cages on the two opposite long sides of the building will remain. The spectators' galleries will receive lower ceilings and the skylights over these areas will be removed. This will serve the double purpose of keeping the free flying birds in the centre or back of the building and of eliminating reflections on the glass of the side cages. New offices will be constructed in conjunction with a darkened escape-proof entry way. Work on this project is scheduled to start very shortly."

* * *

Charles K. Lucas, President, Avicultural Society of Australia, says in a recent letter : " My new aviaries are now running well and my parrots have had a particularly good season. To date I have six Splendids flying, three Many-coloureds, three Bourkes, twelve Turquoisines, seven Peach-faced Lovebirds and eight Princess Alexandras with another five still in the log. One of my hen Princess Alexandras has turned out to be a champion. Last season she was double-brooded and had two lots of two, all successfully reared. This is the first time in sixteen years, since I have been keeping these birds, that I have had a double-brooded hen. This year she has excelled herself ! She laid five eggs, hatched five young and reared all five in the first nest and then went back to work and laid another five eggs, all of which were hatched about a fortnight ago and all of which are doing well. If the second clutch all survive, it will amount to a total of ten young birds in the one season—surely an outstanding record !

The finches are also doing well and for the first time in my avicultural career I have a nest of three young Red-faced Parrot Finches due to fly any day.

I think the season has something to do with results like these. We had an exceptionally rainy winter, which commenced with seven inches of rain in April and heavy and consistent rain has fallen up until about three or four weeks ago. Although the result of all this was that the aviaries became somewhat waterlogged, the excessive moisture possibly stimulated the birds and led to these good results."

A. A. P.

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REVIEW

IM UNBEKANNTEN AUSTRALIEN. Dem Lande der Papageien und Prachtfinken (In Unknown Australia the Land of Parrots and Grass-finches) by KLAUS IMMELMANN, Verlag Gottfried Helene, Pfungstadt/Darmstadt, Germany, 1960. Price 14.80 DM.

This book is a " must " for all who are interested in Australian bird life and can read German. The author, who has previously made detailed studies on Zebra Finches in captivity, spent a year in Australia, primarily in order to study this species in the wild. He succeeded not only in studying wild Zebra Finches under very different conditions in various parts of Australia but also in observing the other Australian estrildines, and many other birds and mammals, from Duck-billed Platypuses to *Homo sapiens*.

His observations were often made under conditions of hardship having to contend with adverse weather, flies, and mosquitoes. The Australians met by the author seem to have been a likeable and hospitable people, but he says many of them had a strong love of killing and shot almost any living creature they saw, whether of use to them or not and whether proscribed or protected by law. In view of this shooting and of the more justified mass slaughter of zosterops and various psittacines in defence of the crops, it seems hard on genuine aviculturists over here that the export trade in Australian birds has been completely banned ; desirable though it was to check its excesses.

Here are a few nuggets from this goldmine of information on many of our favourite aviary birds. Whereas in most parts the Zebra Finch breeds when conditions are favourable and only the male searches for and carries nesting material, in the arid regions of central Australia the species starts to nest as soon as it *starts* to rain and both sexes fetch and carry. This is an adaptation to the very hard living conditions, as in this area birds can only rear young successfully in the brief period of abundance that follows the irregular and uncertain rainfall. They must, therefore, start to breed as soon as it starts to rain, even though they are *then* just as hard up for food supplies as before.

The Crimson Finch has largely deserted its original haunts among the Pandanus trees and in many areas now breeds only in and on buildings. In the centres of the large cities, however, introduced European and Asiatic species are dominant. The Spice Finch seems to be replacing the more beautiful native estrildines in parts of northern Australia but it is not known whether this successful and versatile species was introduced or got to Australia by its own efforts.

In spite of intense persecution by man many of the magnificient parrakeets and cockatoos are as common or commoner than ever. Others, however, are decreasing. The author points out that the natural ability that many Australian species have evolved to enable

them to recuperate after their numbers have been decimated by drought, is now an important factor in their survival in the face of human persecution.

This book can be recommended to all readers of the AVICULTURAL MAGAZINE but particularly those interested in the grass finches, the Gouldian, Bicheno, Firetailed, Crimson and Zebra Finches, on all of which the author gives a great deal of extremely interesting information.

D.G.

* * *

CORRESPONDENCE

FRENCH MOULT RESEARCH AND CROP-MILK IN PARROT-LIKE BIRDS

Reading through the back numbers of AVICULTURAL MAGAZINE my attention was attracted by a report concerning an investigation on French moult sponsored by the National Council of Aviculture (A. M. 1957, No. 2, page 79). It is stated that there is good reason to believe that all parrot-like birds feed their young on crop-milk for at least the first week after hatching and that French moult may, in certain cases, be associated with a deficiency in this crop-milk.

If indeed parrakeets feed their offspring on crop-milk, it is logical that the production of this liquid commences at the end of the breeding period when young birds are expected. An experience I had during the past season (1960) with a pair of Bourke's Parrakeets shows, however, that this is definitely not the case.

According to my notes this particular pair started their second clutch on Tuesday the 7th of June and the last (fourth) egg was laid on the 13th. The hen started brooding on Sunday the 12th of June. Two days later (the 14th) a young Red-rumped Parrakeet which had just hatched in an incubator(!) was placed in the nest of this Bourke's for lack of anything better. I did not expect the Bourke's hen would accept this chick and even if she did she would not be able to feed the young, not having " crop-milk " at her disposal. On inspection in the evening of the same day, however, some food could be seen in the little crop of the chick. There were two more fertile Red-rump eggs in the incubator and when these hatched a few days later these chicks, too, were placed under the Bourke's. All three young grew up normally and were reared to independence by both foster-parents. They are still in my possession (January, 1961), and they are healthy birds, perfectly feathered and excellent flyers, without a trace of French moult.

Conclusion :—Though this is a report of only one case, it is a striking one and it raises some doubt as to the existence of crop-milk in psittacine birds. If, indeed, crop-milk is a necessity for the young chicks to grow up normally my Bourke's hen must have been able not only to produce it at a very awkward time when she could not possibly expect young ones, but moreover the crop-milk must have been of good quality too, evidenced by the fact that my three Red-rumped Parrakeets are in such a fine condition.

Dr. H. D. GROEN,

HAREN,
GRONINGEN,
HOLLAND.

THE NATIONAL SHOW

An attack against the British bird section at the National Show by Derek Goodwin in your MAGAZINE, should not be allowed to go unanswered. May I point out that the size of cages for each species has been standardized by the British Bird and Mule Club and the " National " show committee would not accept specimens in cages not up to the standard required ? Your correspondent states that " everyone does not know that the birds are not *kept* in those little show cages." My answer to that is, there is a British bird corner near the exhibits, where any questions concerning British birds, their care and management, will be fully answered. Of course, there are many people who are only too anxious to condemn, without first hearing, or wanting to hear, the full facts of any case. My own opinion regarding the size of British hardbill show cages is that they are just right. Larger ones would vastly increase the risk of damage to the occupant during transit ; a fact that Mr. Goodwin should know, if he has ever kept birds.

British bird fanciers, indeed all bird keepers, have always had " fervent " enemies. The enemy being people who are almost entirely ignorant of the subject. However, this branch of Aviculture, the British fancy, still flourishes and its growth is steadily increasing.

In conclusion, I sincerely hope that Mr. Goodwin's " horrifying " experience of seeing a Norwich canary, will not lead to nightmares.

A. GREGG.

Secretary, County of Yorkshire British Birds and Hybrid Club.

LINTONHOLME COTTAGE
BRACKENWELL LANE,
NORTH RIGTON, HUBY, NR LEEDS.

I am grateful to the Editor for giving me an opportunity to reply to Mr. Gregg's letter.

I am aware that the sizes of the " British hardbills " show cages are decided by the British Bird and Mule Club. That does not alter the bad impression that these tiny cages give to the general public who visit the shows ; it merely indicates how blind or indifferent those responsible are to the true interests of aviculture.

No doubt anyone angered by the sight of a Hawfinch or some other bird in its narrow cell *ought* to seek out the " questions corner " and ascertain if the birds really are kept in such cages all the time. But such people are not likely to wish to palaver with those whom they consider, however mistakenly, to be addicts of a cruel and unjustifiable pastime. Certainly there is not, as I think there should be, a prominent notice pointing out that the birds are not kept permanently in small cages.

I have kept birds but should not wish to risk their lives just in order (*if* I were lucky) to have them judged better than someone else's on a largely arbitrary and artificial standard of excellence. It is evident, however, that those who show " British softbills " manage to transport their exhibits successfully in spite of the large and attractive show cages that most of them use. And many of these " soft-bills " have plumage, beaks, and feet more easily damaged than those of finches or buntings.

I am happy to be able to assure Mr. Gregg that I have not suffered recently from nightmares. This suggestion of his seems, however, to have merit. Some nightmare sufferers, now oppressed by psychiatrists' assurances as to the intrinsic source of their bad dreams might be happier, and nearer the truth, if they regarded the less pleasant sights at the National Cage Bird Show as the causative factor.

DEREK GOODWIN,

40 FRANKFURT ROAD,
S.E. 24.

I was glad to see in the last issue of the AVICULTURAL MAGAZINE one published protest concerning the National Show. I visited it on the Saturday. My wife, who was with me, was so distressed by the sight of the birds on the dealers' stands, and the condition that they were in, that she has decided not to visit the show in future.

These people have become so accustomed to the conditions under which so many birds are imported and sold that they are quite unaware of the reputation which aviculture is gaining for itself. Country after country is framing laws which forbid the export of birds, and it is the conditions of export and the appalling mortality which have helped to bring this about. We, who are in touch with ornithologists as well as aviculturists, are aware that unless serious action is taken foreign birds will soon be unobtainable, and it is the dealers who will have brought this about, and the aviculturalists who, through their earlier indifference, will suffer for it.

I would add that I wrote a strong letter of protest at the time to *Cage Birds*, who replied in some detail but, as I anticipated, did not print anything about it.

C. G. O. HARRISON.

178 MANTILLA ROAD,
LONDON, S.W. 17.

The Editor does not accept responsibility for opinions expressed in articles, notes, or correspondence.

THE NATIONAL SHOW

An attack against the British bird section at the National Show by Derek Goodwin in your MAGAZINE, should not be allowed to go unanswered. May I point out that the size of cages for each species has been standardized by the British Bird and Mule Club and the " National " show committee would not accept specimens in cages not up to the standard required ? Your correspondent states that " everyone does not know that the birds are not *kept* in those little show cages." My answer to that is, there is a British bird corner near the exhibits, where any questions concerning British birds, their care and management, will be fully answered. Of course, there are many people who are only too anxious to condemn, without first hearing, or wanting to hear, the full facts of any case. My own opinion regarding the size of British hardbill show cages is that they are just right. Larger ones would vastly increase the risk of damage to the occupant during transit ; a fact that Mr. Goodwin should know, if he has ever kept birds.

British bird fanciers, indeed all bird keepers, have always had " fervent " enemies. The enemy being people who are almost entirely ignorant of the subject. However, this branch of Aviculture, the British fancy, still flourishes and its growth is steadily increasing.

In conclusion, I sincerely hope that Mr. Goodwin's " horrifying " experience of seeing a Norwich canary, will not lead to nightmares.

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THE AVICULTURAL SOCIETY RECEIPTS AND PAYMENTS ACCOUNT

Year ended 31st December, 1960

RECEIPTS

	£	s.	d.	£	s.	d.
To Balance at Bank, 1st January, 1960				359	0	2
,, Subscriptions						
Arrears	9	9	10			
Current	1,030	17	5			
In advance	191	12	5			
Life	77	13	4			
				1,309	13	0
,, Donations				41	7	8
,, Sales of Magazines				122	13	0
,, Sales of *The Anatinae*				3	15	7
,, Sales of *Grebes*					13	4
,, Sales of surplus books				120	0	0
,, Sales of waterfowl rings				15	6	6
,, Sales of coloured plates				18	1	8
,, Advertisements				312	10	6
,, Dividends				68	1	0
,, Miscellaneous receipts				2	2	6
				£2,373	4	11

PAYMENTS

	£	s.	d.
By Printing of Magazine	1,474	15	4
,, Coloured plates	198	0	10
,, Authors' separates	21	2	6
,, Sundry printing and stationery	60	5	9
,, Printer's service charges	32	8	6
,, Honorarium to Editor	100	0	0
,, Translations and services	4	4	0
,, Secretarial	52	0	0
,, Preparation of Index	15	15	0
,, Advertisements, leaflets, etc.	14	13	10
,, Expenses at Council Meetings	8	12	9
,, Medals and engraving	32	2	1
,, Purchase of waterfowl rings	34	8	6
,, Postages	44	5	8
,, Bank charges and cheque books	11	0	0
,, Miscellaneous expenditure	14	19	10
	2,118	14	7
,, Balance at Bank, 31st December, 1960	254	10	4
	£2,373	4	11

I have examined the above Account with the books and vouchers of the Society and certify it to be in accordance therewith. I have verified the Bank balance.

LONDON.
31st January, 1961.

J. WATKIN RICHARDS, *Certified Accountant.* } *Hon. Auditor.*

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Universal (Pictorial Packet)		Fortifier		Perfort		Insectivorous (Red Packet)		Fort-Egg and Colorfort	
¼ lb.	1/10½	¼ lb.	2/–	¼ lb.	2/–	¼ lb.	3/–	¼ lb.	2/3
1 lb.	3/6	1 lb.	4/–	1 lb.	4/–	1 lb.	6/–	1 lb.	4/6
3½ lb.	11/9	3½ lb.	13/6	3½ lb.	13/6	3½ lb.	21/–	3½ lb.	15/–
7 lb.	22/9	7 lb.	26/6	7 lb.	26/6	7 lb.	38/8	7 lb.	29/9
28 lb.	85/–	28 lb.	98/–	28 lb.	98/–	28 lb.	154/–	28 lb.	112/–

C.L.O.
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¼ lb.	1/–
1 lb.	2/–
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HEALTH GRAINS
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1 lb.	4/6
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Dried Flies (Chinese)	5/–	9/6
Silkworm pupae ((Whole)	3/9	6/6
" " (Ground)	4/–	6/9
Dried Mayfly larvae (Whole)	6/6	12/6
" " " (Ground)	6/9	12/9
Dried Dragonfly larvae	6/6	12/6
Dried Shrimp (Fine, Medium, or Coarse)	2/3	3/6
Ant Eggs — In very short supply. Current price on application.		
Pure Dried Egg	6/6	12/6
Dried Rowan Berries (Whole)	2/9	4/6
" " " (Crushed)	3/–	4/9

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Marshall C. Barth, 13938 Weddington, Sherman Oaks, California, U.S.A. Proposed by Miss K. Bonner.

Richard S. Bellenger, 5 Wilga Avenue, Dulwich Hill, N.S.W., Australia. Proposed by Miss K. Bonner.

R. J. Bennett, 3 Aspinall Street, Booragul, N.S.W., Australia. Proposed by Miss K. Bonner.

C. F. M. Billet, Kerkstraat 35, Ubach over Worms, Holland. Proposed by A. A. Prestwich.

Mrs. M. A. Broadhead, Bury Hall, Ashill, Norfolk. Proposed by Miss K. Bonner.

H. Bryan, 101 Chester Road, New Oscott, Sutton Coldfield. Proposed by A. E. Huyton.

L. J. Cartlidge, Box 392, Pennington-Harbourton Road, Pennington, New Jersey, U.S.A. Proposed by C. Everitt.

L. Clerc, 4 rue d'Alsace Lorraine, Oran, Algeria. Proposed by A. A. Prestwich.

Brian Collett, 20 Whinyates Road, Eltham, London, S.E. 9. Proposed by A. A. Prestwich.

W. Cooper, 40 Barlow Road, Dukinfield, Cheshire. Proposed by Miss K. Bonner.

Paul F. Courtney, Springfield Hotel, Congleton, Cheshire. Proposed by Miss K. Bonner.

William H. Davey-Richards, Post Office, Walkhampton, Yelverton, Devon. Proposed by A. A. Prestwich.

Ernest W. Day, 11 Station Road, Toddington, Dunstable, Beds. Proposed by Miss K. Bonner.

Mrs. R. Everard, 44 Ashbourne Avenue, London, N.W. 11. Proposed by Miss K. Bonner.

P. J. Hanglin, Bennett's, Ruishton, Taunton, Somerset. Proposed by A. A. Prestwich.

P. A. Harmsworth, Two Gables, Manor Road, Tongham, Nr. Farnham, Surrey. Proposed by A. A. Prestwich.

Mrs. Velma Hart, 1525 W. Canton Street, Long Beach 10, California, U.S.A. Proposed by Otis Wade.

G. R. Hogan, 639 N. Turner Avenue, Dallas 8, Texas, U.S.A. Proposed by Miss K. Bonner.

Paul E. Knight, "Pinehaven," Farley Green, Albury, Nr. Guildford, Surrey. Proposed by Miss K. Bonner.

Frank Y. Larkin, Putnam Trust Company, The Bank of Greenwich, Greenwich, Conn., U.S.A. Proposed by Miss K. Bonner.

Michel Laroche, 20 rue de la Liberté, Semur en Auxois (Côte d'Or), France. Proposed by A. A. Prestwich.

A. J. Lawrence, 166 Ladyshot, Harlow New Town, Essex. Proposed by Miss K. Bonner.

Lee W. Lenz, 1401 Guadalajara Place, Claremont, Calif., U.S.A. Proposed by A. A. Prestwich.

Mrs. C. D. Mallory, Rebel's Retreat, West Redding, Connecticut, U.S.A. Proposed by John W. Livermore.

Robert F. Marshall, The Lodge, Waterlow Park, Swains Lane, Highgate, N. 6. Proposed by Miss K. Bonner.

Frank Miser, 10501 Magnolia Avenue, Stanton, California, U.S.A. Proposed by A. A. Prestwich.

Dr. Norman G. B. McLetchie, M.D., 49 Whipple Avenue, Laconia, New Hampshire, U.S.A. Proposed by C. Everitt.

Mrs. Hélène T. Morrow, 1312 No. 20th Street, Waco, Texas, U.S.A. Proposed by Otis Wade.

B. M. B. Papé, "Hollington," 162 Kimbolton Road, Bedford. Proposed by F. E. B. Johnson.

GEORGE R. PRYOR, Brookside, Calver, via Sheffield. Proposed by Miss K. Bonner.

J. M. ROBINSON, 852 Ashton New Road, Clayton, Manchester 11, Lancs. Proposed by J. Moir.

THEODORE D. SARGENT, Department of Zoology, University of Wisconsin, Madison, Wisconsin, U.S.A. Proposed by Miss P. Barclay-Smith.

GEORGE SEARLES, Mt. Vernon Avenue, Patchogue, New York, U.S.A. Proposed by A. A. Prestwich.

ELMER STARR, 2731 Fruitvale Avenue, Bakersfield, Calif., U.S.A. Proposed by Otis Wade.

H. STEEN, 6900 Hayvenhurst Avenue, Van Nuys, Calif., U.S.A. Proposed by Mrs. C. Wagner.

MAXIMILIAN G. STERN, 3 Uplands, Portsmouth Road, Guildford, Surrey. Proposed by A. A. Prestwich.

JAMES G. SUTHARD, 1881 Raymond Avenue, Long Beach 6, California, U.S.A. Proposed by Miss K. Bonner.

PETER THOMPSON, 361 Homer Street, Earlwood, Sydney, N.S.W., Australia. Proposed by A. A. Prestwich.

Mrs. N. TOMLINSON, Windy Ridge, Wigginton Road, Tamworth, Staffs. Proposed by N. Tomlinson.

Dr. J. V. TRANTER, M.B., Ch.B., M.R.C.S., L.R.C.P., 21 Raynor Road, Wolverhampton, Staffs. Proposed by A. A. Prestwich.

GILBERT DE VISSER, 13824 Greenbriar Avenue, Bellflower, California, U.S.A. Proposed by A. A. Prestwich.

THEODORE J. WANLESS, 2341 Canehill Avenue, Long Beach 15, California, U.S.A. Proposed by A. A. Prestwich.

RONALD WEBB, 25 Bishop's Avenue, Bishop's Stortford, Herts. Proposed by A. A. Prestwich.

Mrs. M. WILLIAMS, Roistar, Heath Ridge, Cobham, Surrey. Proposed by Miss K. Bonner.

F. G. WOOD, 125 Coppice Road, Arnold, Notts. Proposed by Miss K. Bonner.

READMITTED

CHRISTOPHER MARLER, The Manor House, Weston Underwood, Olney, Bucks.

EDWARD J. MARUSKA, 3038 South St., Louis Avenue, Chicago 23, Illinois, U.S.A.

RALF H. MASURE, 336E—30th Street, New York 16, N.Y., U.S.A.

P. W. MURPHY, 219 So. Flenniken, El Dorado, Ark., U.S.A.

H. PEARL (Change of Address), 123B Queensway, Hatfield, Salisbury, Southern Rhodesia.

NEW MEMBERS

Correction

For LAO WEI-CHING, read WEI-CHING LAO.

The thirty-eight Candidates for Election in the January–February, 1961, number of the *Avicultural Magazine* were duly elected members of the Society.

CHANGES OF ADDRESS

Mrs. MURIEL M. ADAMSON, to P.O. Box 2237, Kronprindsens Gade Sta., St. Thomas, U.S. Virgin Islands.

D/Sgt. R. S. CARDY, to 1st Bn. Irish Guards, Caterham Barracks, Caterham, Surrey.

DEREK GOODWIN, to 40 Frankfurt Road, London, S.E. 24.

W. M. HAWLEY, to 7787—15th Avenue, New Westminster, B.C., Canada.

Fr. HUYBRECHTS, Stw. op Leest 122, Hombeek, Belgium.

Dr. LEWIS F. KIBLER, to 1373 North Main Street, Jamestown, New York, U.S.A.

Dr. F. B. LAKE, to 34 The Ridings, Surbiton, Surrey.

Mrs. CYNTHIA B. MADIGAN, to Villa Rosario Enea, Falva de Ulia, San Sebastian, Spain.

R. P. R. McGlashan, to Shell-B.P., Private Mail Bag 2418, Lagos, Nigeria.
Dudley C. Meyers, to c/o Messrs. Sinclair Murray and Co. Private, Ltd., 14 India Exchange Place, Calcutta, 1, India.
Edward W. Norton, to 699 Washington Street, Elmhurst, Ill., U.S.A.
J. M. Reeve, to Rosedene, 62 Welbeck Road, Bolsover, Nr. Chesterfield.
H. Stiven, to c/o Shell Co. of Nigeria, Ltd., P.M.B. 2032, Lagos, Nigeria.
H. A. Tardiv, to Deborah Bay, Port Chalmers, Otago, New Zealand.
J. G. Weeks, 21 Ardtully Road, Kenmare, Krugersdorp, Transvaal, South Africa.

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	£	s.	d.
Lady Poltimore	3	0	0
Charles J. Pearson	2	10	0
Edward R. FitzSimmons	2	10	0
F. E. B. Johnson	1	10	0
Mrs. H. L. Schumacher		15	6
Mrs. J. W. Flintoft		15	0
W. R. Lorrison		10	0

MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is THREEPENCE PER WORD. *Payment must accompany the advertisement, which must be sent on or before the 15th of the month to* A. A. Prestwich, 61 Chase Road, Oakwood, N. 14. *All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

For Indian birds buy direct from: K. L. Aceeli and Sons, Post Box 12008, Calcutta 2, India.

Aviculture Magazine, 1956–1960 inclusive, £1: Mrs. H. E. Dennis, Lower Nash, Nutbourne, Pulborough, Sussex.

WAX MOTHS

Wax moths, price $6.00 per thousand, are obtainable from: Wallace C. Swank, Route 1, Eaton Rapids, Michigan, U.S.A.

Wanted.—Aviculture Magazines for 1925, 1926, 1927, 1931, 1932, 1938. Bound copies preferred. Prices, etc. to:—A. Birtles, 169 Royds Street, Rochdale, Lancs.

George R. Pryor, Brookside, Calver, via Sheffield. Proposed by Miss K. Bonner.

J. M. Robinson, 852 Ashton New Road, Clayton, Manchester 11, Lancs. Proposed by J. Moir.

Theodore D. Sargent, Department of Zoology, University of Wisconsin, Madison, Wisconsin, U.S.A. Proposed by Miss P. Barclay-Smith.

George Searles, Mt. Vernon Avenue, Patchogue, New York, U.S.A. Proposed by A. A. Prestwich.

Elmer Starr, 2731 Fruitvale Avenue, Bakersfield, Calif., U.S.A. Proposed by Otis Wade.

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Christopher Marler, The Manor House, Weston Underwood, Olney, Bucks.

Edward J. Maruska, 3038 South St., Louis Avenue, Chicago 23, Illinois, U.S.A.

Ralf H. Masure, 336E—30th Street, New York 16, N.Y., U.S.A.

P. W. Murphy, 219 So. Flenniken, El Dorado, Ark., U.S.A.

H. Pearl (Change of Address), 123B Queensway, Hatfield, Salisbury, Southern Rhodesia.

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W. M. Hawley, to 7787—15th Avenue, New Westminster, B.C., Canada.

Fr. Huybrechts, Stw. op Leest 122, Hombeek, Belgium.

Dr. Lewis F. Kibler, to 1373 North Main Street, Jamestown, New York, U.S.A.

Dr. F. B. Lake, to 34 The Ridings, Surbiton, Surrey.

Mrs. Cynthia B. Madigan, to Villa Rosario Enea, Falva de Ulia, San Sebastian, Spain.

R. P. R. McGlashan, to Shell-B.P., Private Mail Bag 2418, Lagos, Nigeria.
Dudley C. Meyers, to c/o Messrs. Sinclair Murray and Co. Private, Ltd., 14 India Exchange Place, Calcutta, 1, India.
Edward W. Norton, to 699 Washington Street, Elmhurst, Ill., U.S.A.
J. M. Reeve, to Rosedene, 62 Welbeck Road, Bolsover, Nr. Chesterfield.
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